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**Marine Casualty
Investigations**

**Enquêtes sur les
accidents maritimes**

**Investigation
Report
to the Minister
pursuant
to sections
542 or 545
of the
Canada
Shipping Act**

**Rapport
d'investigation
au Ministre
conformément
aux articles 542
ou 545 de la Loi
sur la marine
marchande
du Canada**

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INVESTIGATION REPORT INTO
THE CIRCUMSTANCES SURROUNDING AN INJURY
TO A CREWMEMBER ON BOARD THE P.V.
"CAPE BAULD", DURING FISHING OPERATIONS
OFF THE COAST OF NOVA SCOTIA,
MAY 28, 1986.

REPORT No. 450

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INVESTIGATION REPORT INTO THE CIRCUMSTANCES SURROUNDING AN
INJURY TO A CREWMEMBER ON BOARD THE F.V. "CAPE BAULD", DURING
FISHING OPERATIONS OFF THE COAST OF NOVA SCOTIA,
MAY 28, 1986.

Vessel Particulars

Name	"CAPE BAULD"
Official Number	328670
Port of Registry	Halifax, Nova Scotia
Call Sign	VGJZ
Gross Tonnage	629.04
Net Tonnage	292.10
Length	42.76 m
Breadth	10.06 m
Depth	4.54 m
Type	Large fishing vessel, steel construction stern trawler.
Built	1968, Halifax, Nova Scotia
Propulsion	One, Deutz 8 cyl diesel engine, 970 kW. Single controllable pitch propeller, bridge control.
Crew	16 (including Master)
Certification	Canadian Coast Guard, Ship Safety inspection certificate SIC-31, issued October 10, 1985 and dated to expire October 9, 1986.
Owner	National Sea Products Ltd. Halifax, Nova Scotia

NOTE: All times in this report are expressed in Atlantic Daylight Saving Time (UTC minus 3 hours).

Background

During the early morning of May 28, 1986 a deck-hand on board the F.V. "CAPE BAULD" suffered an arm injury while the vessel was engaged in fishing operations off the coast of Nova Scotia. The initial report was that the injury was very serious; fortunately this proved not to be so.

The injured deck-hand was transferred from the "CAPE BAULD" to an oil drilling rig by an offshore supply vessel. He was subsequently transported from the oil drilling rig to Halifax, Nova Scotia by a Canadian Forces helicopter for medical treatment.

Particulars of Injured

Name	: Hubert Myles
Position aboard Vessel	: Deck-hand
Age	: 44
Address	: Dartmouth Nova Scotia

Narrative

After departing Lunenburg, Nova Scotia at 1400, May 24, 1986, the F.V. "CAPE BAULD" proceeded towards the fishing banks off the coast of Nova Scotia.

The voyage was uneventful and by May 28, 1986 had produced a mixed catch of groundfish of approximately 100 tonnes. At 0600, the deck watch was changed and the fishing gear 'hauled back' (retrieved). By 0620, after the net had been emptied and 'shot away' (reset), the deck crew proceeded below to clean and stow the catch; four went to the process room and the remainder went to the fish hold.

In the process room, work was proceeding normally, with fish of predetermined size being gutted by machines. At approximately 0715, work in the process room stopped as the crew working in the fish hold were not able to stow the catch as fast as it was being processed.

The boatswain who had been assisting in the process room, went below to determine the cause of this delay in the fish hold.

During this time the starboard gutting machine was reportedly stopped and a deck-hand reached into the discharge side, with his left arm, in an attempt to clear the plugged water and offal discharge pipe. At 0720, the gutting machine rotated and, as the deck-hand withdrew his arm, it was cut by a vertical catch fitted on the unit's conveyor belt.

The injured deck-hand ran directly to the wheelhouse and informed the master of his injury. After first aid was administered to the deck-hand, the fishing gear was 'hauled back' and the "CAPE BAULD" proceeded from position 44°11'N, 59°06'W, towards Louisburg, Nova Scotia, approximately 115 miles to the NNE. During this time the "CAPE BAULD" contacted a Canadian Coast Guard ship to inquire if a faster vessel was available to transport the injured deck-hand for medical treatment. The "CAPE BAULD" was advised that the Coast Guard ship would not be able to transport the injured deck-hand ashore any faster, however, advised the fishing vessel to contact the Mobile Offshore Drilling Unit (MODU) "BOW DRILL 2".

At approximately 0740, the "CAPE BAULD" contacted the "BOW DRILL 2", who in turn advised the Rescue Co-ordination Centre, Halifax (RCC) via Halifax Coast Guard Radio at 0743. By 0800, after receiving radio medical advice recommending that the injured deck-hand be transported ashore as soon as possible, the "CAPE BAULD" proceeded towards the "BOW DRILL 2" which was some 40 miles to the SW, in position 43°09'N, 59°47'W. At 0810, RCC tasked rescue helicopter R306 from 413 Squadron, which departed CFB Summerside, P.E.I. at 0857.

Originally it was intended for R306 to hoist the injured deck-hand from the "CAPE BAULD"; however, due to the arrangement of the fishing vessel's rigging and antenna, this undertaking was reconsidered.

At 1112, the injured deck-hand was transferred to the offshore supply vessel "CHIGNECTO BAY" and by 1147 he had been hoisted on board the "BOW DRILL 2". By this time R306 had landed on the drilling rig and after refueling, departed "BOW DRILL 2" at 1220, with the injured deck-hand on board. At 1410, the injured deck-hand was landed at Halifax, Nova Scotia and transported to hospital.

The "CAPE BAULD" continued her fishing voyage and returned to Lunenburg, Nova Scotia at 0600, May 30, 1986 without further incident.

Analysis

1. Weather

Weather conditions at the time of the accident were reported as SE winds of 10 to 15 knots, with a 1 to 1.5 m sea. Visibility was zero in fog with an air temperature of approximately 12°C.

Visibility increased to approximately $\frac{1}{2}$ mile prior to transferring the injured deck-hand to the "CHIGNECTO BAY" and to about 4 miles by 1200.

In these conditions the "CAPE BAULD" would not be rolling or pitching excessively. It would appear weather conditions were not a contributing factor in this accident.

2. Fish Processing

When the catch is emptied from the net, the fish are dumped through a main deck hatch leading to a receiving bunker in the process room. Fish of a predetermined size are manually sorted and transported by a conveyor to two gutting machines fitted port and starboard. After being run through gutting machines, the fish are taken by another conveyor to the fish hold via a wash box. Upon reaching the fish hold, the gutted fish are stowed in ice. Fish of a larger or smaller size than the gutting machines' capacity are dressed by hand.

Normally three or four crewmembers would be employed in the process room and two or three in the fish hold during each watch.

Under certain conditions, the noise level in the process room can be relatively high.

3. Fish Processing Machine

The fish gutting machines fitted on board the "CAPE BAULD" are Jutland Mark III, manufactured by Kronborg Products ApS, Denmark, and are designed to clean various species of fish from 30 cm to 75 cm in length. Fish are placed on the machine's conveyor, 'belly up' with the head against a vertical U-shaped catch fitted on every ninth conveyor plate.

This conveyor moves the fish through the enclosed gutting section where rotating knives, similar to circular saw blades, along with a rotating brush and a

water jet, clean and remove the entrails from the fish. The cleaned fish are then discharged from the machine on to another conveyor leading to the wash box and fish hold.

A start/stop push button switch to control the electric motor powering each unit is located above the machinery within easy reach of the operator.

Except for a section of conveyor where the fish are loaded, the rotating and driving components of the machines are enclosed for the protection of both the operator and the machines. A safety shut off, incorporated with an electrical micro switch, is fitted at the inlet side of the gutting section. This device will stop the machine if fish of a larger than capacity size are fed into the unit or if the operator was somehow caught in the machine's conveyor. The machines are also fitted with a safety slipping coupling and, in the event the conveyor is blocked, the drive will stop.

Easily removed access plates are fitted near the forward lower end of the machine's casing, located directly opposite the water and offal discharge pipe.

Electrical components associated with the gutting machine appear to be well protected from moisture. Circuit breakers for the machine's electrics are located on a panel situated in a passageway just aft of the process room.

4. Events in the Process Room

Reportedly, the starboard gutting machine had been stopped before the deck-hand reached inside to clear the water and offal discharge pipe. However, none of the crew in the process room, or the injured deck-hand, could recall actually stopping the machine. The stop/start switch for the starboard gutting machine is situated above the unit alongside two identical controls for separate conveyor motors. It is possible that, in haste, a conveyor could have been stopped by mistake instead of the gutting machine, although all switches are identified with name plates.

Instead of removing the access plate fitted directly opposite the water and offal discharge and using a conveniently located long steel hook provided for that purpose, the injured deck-hand chose to reach into the discharge end of the starboard machine to clear it.

During this time, the deck-hand's left arm was cut by a U-shaped catch attached to the machinery conveyor as the unit rotated.

5. Subsequent Use, Examination and Testing of the Gutting Machine

After the injured deck-hand had been evacuated and the "CAPE BAULD" resumed fishing operations, the starboard gutting machine was used for the remainder of the voyage, processing approximately an additional 45,400 kg of fish without further incident.

When the "CAPE BAULD" arrived at Lunenburg, N.S., May 30, the starboard gutting machine was tested and the electrical circuitry examined for possible defects. Although the testing and examination of this gutting machine was extensive and thorough, no reason for a sudden start could be detected.

It is possible the machine rotated due to an electrical short circuit caused by moisture or through some other reason; however, considering the subsequent testing and examination of the unit by competent personnel, this would appear unlikely.

Electrical circuits on board the owners' vessels, which are subject to excessive moisture, are megger tested monthly by shore based maintenance personnel.

Reportedly, since this incident, the crew now ensure a gutting machine is stopped by using both the push button switch and the circuit breaker before cleaning the unit.

As the operation of the gutting machines is relatively simple, formal instructions to vessel crewmembers who operate the units are not considered necessary by the owners.

Any adjustments required to the gutting machines are performed by the vessel's engineers who have received formal training in the maintenance of these units.

In an attempt to prevent further similar incidents, the owners have implemented a program to replace push button switches with lock out type rocker switches and are posting warning signs near the gutting machines.

6. Possible causes of start-up of machine

There are therefore two possibilities as to why the

machinery started, neither of which can be identified as being the actual cause:

- i) the machinery was jammed by fish and the safety coupling was slipping, as designed, and then the fish self-cleared, automatically resuming operation of the unit, or
- ii) moisture across one of the stop/start control buttons completed the circuit.

A third possibility exists and that is that only the conveyor was stopped and the gutting machine was in operation throughout but not realized by the crewmember.

7. Experience and Qualifications of Personnel

a) The master in command of the "CAPE BAULD", at the time of the accident, has been serving in the vessel as mate and relief master over the past 2½ years.

He has been serving at sea since 1967 and has been sailing in fishing vessels as mate and relief master since 1973.

He holds a Canadian Certificate of Competency as Fishing Master issued October 1973, along with a valid First Aid for Mariners Certificate.

b) The injured deck-hand has been serving at sea in fishing vessels over the past 20 years, with the last 2½ years on board the "CAPE BAULD". He does not hold any formal marine qualifications.

His injuries resulting from this accident consisted of lacerations to the back of his upper left arm. Although the injury was not as serious as first suspected, the lacerations were required to be sutured and, due to the possibility of infection, he remained in hospital for observation until June 3.

He resumed his duties on board the "CAPE BAULD" approximately one month later.

c) The boatswain had been serving on board the "CAPE BAULD" for the past 2½ years, with 5 years previous experience as boatswain in similar fishing vessels. He has been serving at sea in fishing vessels since 1969.

He holds a Canadian Certificate of Competency as Fishing Master, Class 4, issued June 1983.

d) One of the deck-hands in the processing room during the accident has also been serving on board the "CAPE BAULD" for 2½ years and in other fishing vessels in various capacities since 1963. He holds a Canadian Certificate of Competency as Fishing Master issued in October 1968.

e) The other deck-hand in the processing room during the casualty has been serving at sea in fishing vessels since 1980, this being his third trip on board the "CAPE BAULD". He has no formal marine qualifications.

Findings

A deck-hand on board the F.V. "CAPE BAULD" suffered an injury to his left arm while attempting to clear the water and offal discharge of a fish gutting machine.

It would appear that the following factors contributed to this accident:

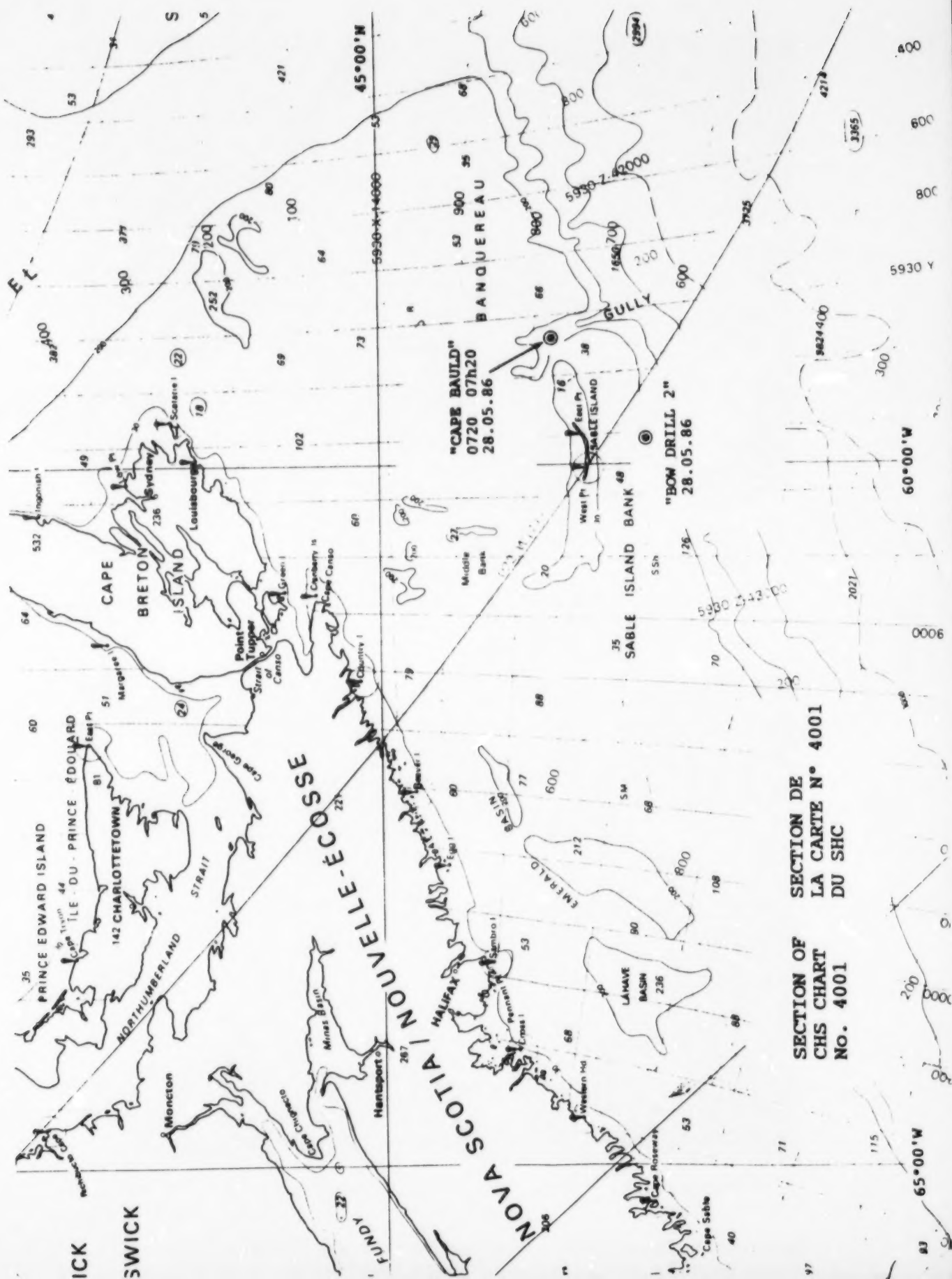
- the deck-hand chose to reach into the discharge of the gutting machine instead of removing an access plate and using a hook provided for that purpose; and
- it cannot be established if the gutting machine was actually stopped prior to the attempt to clear the discharge.

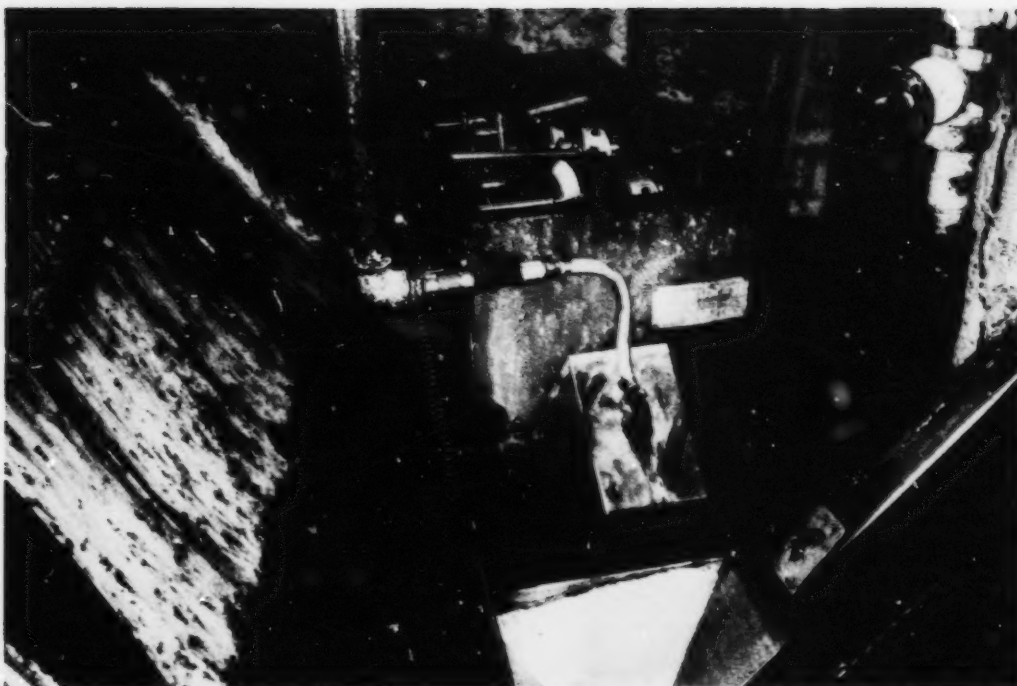
Other Findings

It would further appear that:

- The gutting machine did not have a history of starting inexplicably and, subsequent thorough examinations could not determine any reason for it to do so.
- The owners have taken positive action in an attempt to prevent further similar accidents on board their vessels.
- The medical evacuation was performed in an efficient and professional manner.

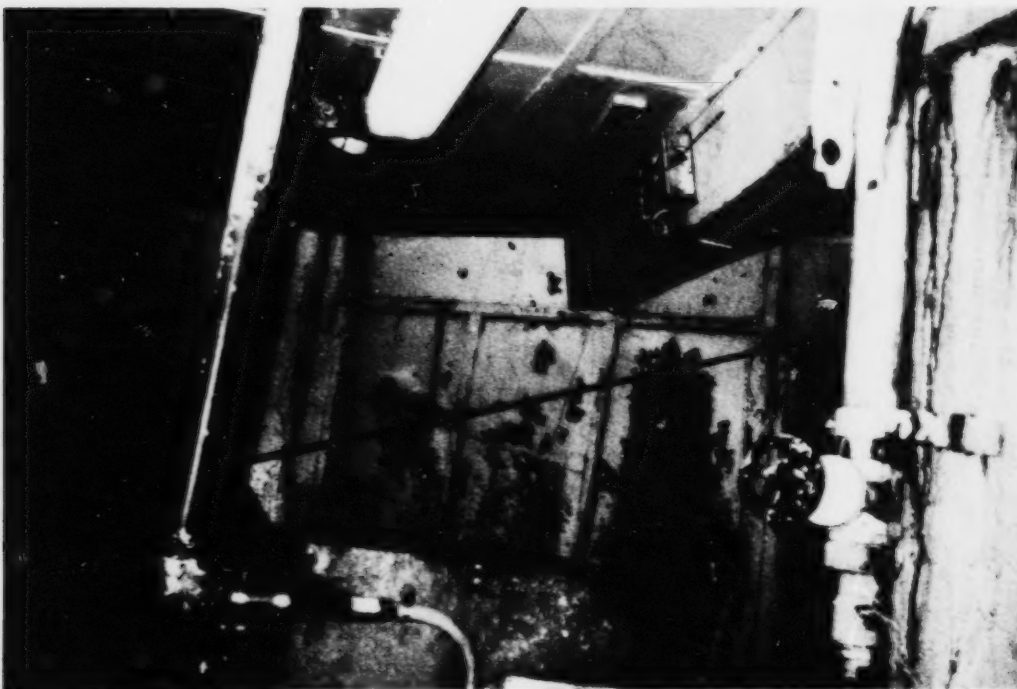
OTTAWA, ONTARIO
DECEMBER, 1986





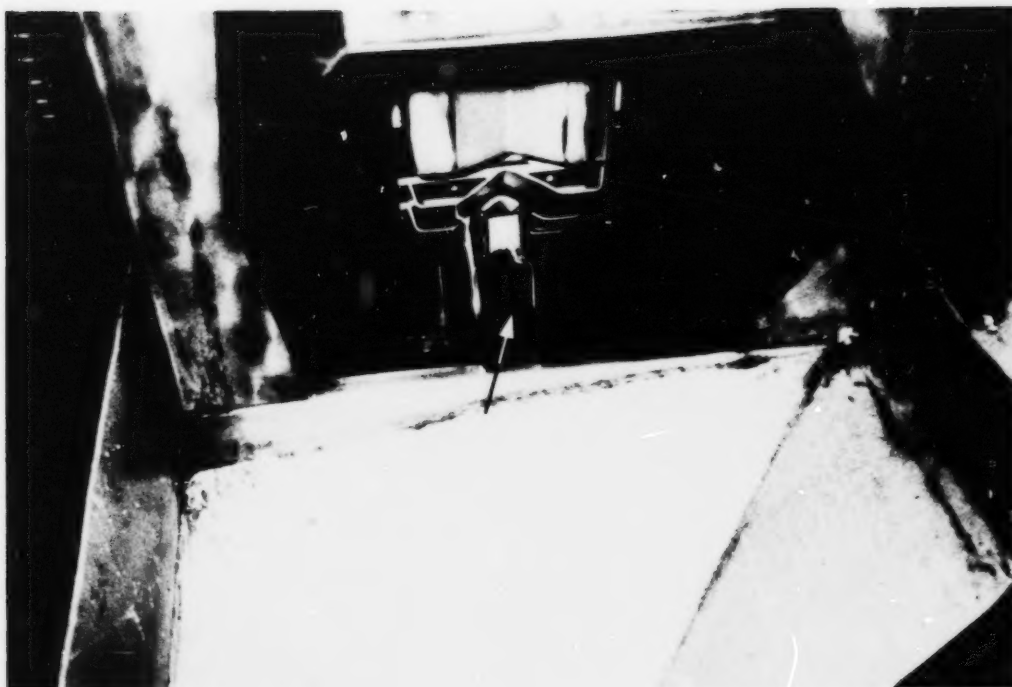
Gutting machine. Discharge end forward. (Various covers and guards have been removed for testing and examination.)

Machine à éviscérer. Côté avant du déchargement. (Plusieurs panneaux d'accès et de protection ont été enlevés pour examen et essai.)



Gutting machine. View shows location of push-button switches above machine.

Machine à éviscérer. Vue démontre l'emplacement des commutateurs à boutons-poussoirs au-dessus du moteur.



View of gutting machine, into discharge end. Shows U-shaped catch on conveyor.

Vue de la machine à éviscérer du côté du déchargement.
Prise en forme de U sur le convoyeur.



Forward end of gutting machine, showing access plate removed.

Démontre l'avant de la machine à éviscérer avec le panneau d'accès enlevé.